Electron spin dynamics in asymmetric QWs

Peter Eldridge

Spintronics

• Emerging Technology: Devices that utilise both the spin and charge of electrons

Requirements

• Generation of spin alignment
• Long spin memory
• Manipulation of spin

Combining Asymmetry in QWs

All these can be achieved through the interplay between different asymmetries

Alloy Composition Engineering + Electric Field
**Results**

Pump-Probe technique

**Problems**

Built-in asymmetry effect appears to be very small
Electrons/holes are ‘tipped’ out of wells quite easily

**Future Work**
Measurement of spin relaxation in asymmetrical wells with no electric field
(110) AlGaAs/GaAs 2DEG